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ABSTRACT

Designed for use with students in the first, second, and third grades, the resource guide is one of a series of 3 booklets (primary, intermediate, and junior high levels) developed by the Crystal Lake, Illinois, school district under a Title III appropriation of the Elementary and Secondary Education Act. Outdoor education activities are suggested for incorporation into language arts, mathematics, art, physical education, music. and social studies. Suggested activities for science and social studies classes are presented by grade level. RC 003 930 is a related document. (TL)

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# OUTDOOR EDUCATION

## PRIMARY

# RESOURCE GUIDE

A REPRINT OF

THE RESOURCE GUIDE FOR TEACHING

IN-ABOUT-FOR-THE OUTDOORS

1967.

FUNDED: TITLE III E.S.E.A.

SPONSOR: CRYSTAL LAKE DISTRICT No. 47
CRYSTAL LAKE, ILLINOIS.

RC003931

# INTRODUCTION.

Outdoor education is a way of learning through direct experience in a natural setting, not an additional subject. An outdoor education program is needed to help each child understand the world in which he lives, to teach conservation, to develop powers of observation, to facilitate the discovery method of learning, to develop an appreciation of our social heritage, to develop understandings of the inter-relationships of man and nature, and to improve citizenship experiences.

The Director of the Outdoor Education Program serves as coordinator and administrator for the project. He is available as a consultant to classroom teachers and prepares materials and equipment for use in the schools. He assists classroom teachers in organizing lessons and units, field trips, discussions concerned with outdoor education, and directs inservice training sessions.

During the summer months the director develops outdoor education programs for the greater Crystal Lake Park District. While doing all these things he keeps close contact with the children and adults of the community.

It is the purpose of this booklet to offer suggestions to you, the classroom teacher, for using the out-of-doors as an extension of your classroom.
The ideas offered here are offered as suggestions only, you need not feel limited to them. The scope of outdoor education is limited only the the imagination.

It is not necessary to have elaborate facilities to learn in the out-of-doors. The school grounds themselves, and areas around the grounds are rich in valuable resources.

The program is divided into three booklets; primary, intermediate, and junior high. Realizing the fact that many activities are suitable for more than one grade level, a compilation of all three sections is located in your professional library.

TEACHER - STUDENT ORIENTATION.

1. Teacher Orientation.

A. Good discipline through adequate preparation
   1. Be sure each child knows the purpose of the trip.
   2. Be sure each child understands the procedures he should follow.
   3. Conduct a briefing at the site of the activity.

B. Developing concepts
   1. Have specific lesson plans or objectives prepared before going outdoors
   2. Keep teaching methods and activities simple
   3. Over-plan, but limit concepts.
   4. Use several approaches to reinforce learning.
   5. Saying "I don't know" is often a good stimulus in motivating students to discover for themselves.
   6. Use the "teachable moment," even though part of the original plan may be deleted.
   7. Keep activities fun but purposeful.

II. Student Orientation

A. Use of public areas must guide students to realize their responsibilities.
   1. Cooperative student-teacher planning stimulates democratic practices.
   2. A realization of nature's cycle leads to good conservation practices.
   3. Leisure time interests usually evolve as a result of outdoor activities.
   4. Group standards are raised through cooperative efforts.

B. Possible ideas to be established by the students concerning personal responsibilities in the out-of-doors.

1. Wildlife
   a. Let wildlife remain wild
   b. Respect habitats.
      (1) Avoid collections of nests, eggs, etc.
      (2) Nesting birds, animal homes, etc., should be observed and left undisturbed.
   c. Know precautions to prevent injuries from animals.
2. Plantlife
   a. Practice proper trail blazing techniques to prevent tree damage.
   b. Set guidelines for leaf and twig collecting.
   c. Consider aesthetic value and propagation before picking flowers.
   d. Use care in walking so as not to ruin flowers.
3. Childlife
   a. Always obtain permission to use any property; respect "No Trespassing" signs.
   b. Stay with assigned buddy or group.
   c. Respond promptly to predetermined signals from group leader or teacher.
   d. Be sure water and plants are safe for human consumption before drinking or eating.
   e. Fulfill any assignments to the best of your ability.
   f. "A good code of conduct is to practice the six L's: Look, listen learn, love, let alone and litter not!" (Audubon Manual of Outdoor Conservation Education)
4. Aquatic Life
   a. Keep water as clean as or cleaner than you found it.
   b. Fish only when you know this is permissible.
   c. Return specimens to pond or lake after adequate study.

LANGUAGE ARTS - Primary.

LISTENING AND RESPONDING.

Activities:

1. Practicing Listening: One way to make the development of listening skill dramatic is to have the group of children stand with eyes and fists closed. Then a fist may be opened, one finger at a time, as sounds are heard.

2. Listening and Describing: On a listening trip, pause often for the children to think how to describe a certain bird's call, the noise of feet on gravel or in dry leaves, the hum or buzz of a bee, or some other sound.

   The class whose interest in words is developing will be quick to note and to use descriptive words, such as "gauzy" wings and "turquoise body on a slender stem" in telling of a damsel fly.

   During a quiet period make a list of all the types of sounds heard, such as rustle, buzz, rumble.

3. Using an Outdoor Setting for a Story: This atmosphere sets the mood for many plots. The listener is the pioneer or Indian of the story when he listens to it read or told in the shade of rugged trees in the forest.

PREPARING FOR READING AN VOCABULARY DEVELOPMENT

Activities:

1. Recognizing and Recording New Words: Each time the group has an outdoor education experience, remember the opportunity to add new words to the vocabulary of the group. Members of the group may take turns being the recorder who adds to the list of words in a small notebook.

2. Learning to Spell Outdoors: When a new word is introduced outdoors, have each child write the word in snow, sand, or moist earth with his finger or a small stick.

3. Listening and Classifying Descriptive Words: Let the group make a list of words and phrases that could be used in describing some one object--a piece of bark or leaf, for example. Classify these words and phrases in categories such as color, size, shape and texture.

PREPARING FOR READING AND VOCABULARY DEVELOPMENT (cont.)

Activities:

4. Listening and Using Adjectives: List five or six adjectives that might apply to objects seen, heard, smelled, felt, or tasted. Have the children copy the list and use it as a basis for discoveries of natural objects to which the adjectives would apply. For example: soft --moss, dandelion "parachutes", fog, piles of clouds, steps of an ant. Other adjectives might be: rough, sharp, smooth, etc.

ORGANIZING AND PRESENTING INFORMATION

Activities:

1. Playing a Game of Categories: Near the close of an outdoor education experience, practice organizing information by using a game. Divide the class into groups, each of which chooses something --an animal, bird, tree, or a living thing from some other category, depending on the emphasis of the experience. One group tells the class of the object that it chose. One of the other groups tries to guess the name of the object by asking questions that can be answered by yes or no. A no answer gives the turn to ask questions of another group. The group that guesses the object correctly may choose the next object. Any group that has to say, "We don't know" instead of yes or no to more than three questions must tell the name of its object.

2. Identifying Animal Homes: Observe animals' homes and habits during a hike. This information can then be used in writing brief riddles describing the home or the animals, accompanies by illustration of the homes.

3. Organizing Sense Impressions: Have each child put headings on five small sheets of paper -- one for each of the five senses -- and allow time during an outdoor experience to jot down the learnings gained from each method of observation. A list of experiences might appear as follows: We saw: various sizes of dogs, some unfeathered birds in a nest. We heard: the mournful note of a dove, baby birds' chirping for food.

WRITING AND RECORDS AND REPORTS.

Activities:

1. Taking Notes: In note-taking discuss with the children the need for (a) listing only the most important items of information;

WRITING RECORDS AND REPORTS (Cont.)

Activities:

1. (b) writing legibly; (c) abbreviating long or difficult words; (d) recording enough information to provide material for discussion; and (e) using separate sheets of paper for different topics.

2. Keeping a Diary of Developments: A group or an individual diary of a particular development will be an objective record of growth in language arts skills as well as of skill in observation if it covers several m onths or a year. A group might "adopt" a tree and keep records on the tree's general appearance, "inhabitants," leaves, etc.

   Have a group of six or eight children keep records of one small plot area over a period of time indicating plant life and changes, animal life or evidence of animal life, etc.

CREATIVE WRITING

Activities:

1. Writing One-Sentence Descriptions: Have the children write one-sentence descriptions of simple things that they observe -- for example, the bark of a tree. Encourage the children to use words that will make descriptions distinctively their own. Asking "What is this like that we know about?" can be a very helpful procedure in writing.

2. Writing the"adventures" of a Lucky Object: Many children enjoy having a "lucky" stone or other object in their possession. Some thought and imagination could produce a creative adventure story about the travels or "experiences" of this object. How some attractive waterworn stone reached a certain area, or how a certain object was discovered or mysteriously appeared or acquired its "luck" could be the theme.

3. Writing Tall Tales: Let children develop their imaginations through written interpretation of the events of a hike in the form of a "tall tale". An anthill might look like a strange volcano-like mountain; a woodpecker might sould like a giant knocking.

CREATIVE WRITING (cont.)

Activities:

4. Writing Haiku: This is a Japanese poetic form expressing a simple thought about nature. The first line should contain five syllables, the second line, seven, the third line, five, - for example:

Across the river
Beautiful burning sunset
Sinking into night.

5. Taking a "Martian" viewpoint: Let the children pretend to be scientists from outer space. They must see things as Martians--for example, phrases such as "three Martians high", "flat like a sheet of metal," slender as the antenna of our space ship" might be used.

DRAMATIZATION

Activities:

1. Dramatizing Action Observed Outdoors: Activities of animals and movements of trees or plants in the wind are some of the things that can be dramatized. Watch, describe, and then act out these activities. Have other children guess what is being portrayed.

NUMBER CONCEPTS AND COUNTING

Activities:

1. Number and size concepts may be reinforced on the playground with all children actively participating, using directions such as these:

   Take three steps forward. Take five steps to the left.

   Pick up six leaves (or pebbles). Arrange them in different kinds of groups.

   Arrange seven sticks in order of size, with the largest first and the smallest last.

2. Go outside to clarify mathematical word meanings:

   What do you see high in the air?

   Are the clouds higher than the trees?

   What is the highest-- the tree, the telephone pole, or the school's roof?

   Other words that can be developed are: low, small, large, near, far, late, more than, less than, light, heavy.

3. Take a tree census. Count all the trees of each variety that can be seen in a walk around the block or along a woodland trail. To reinforce ten's and the meaning of one hundred, - while at Veteran Acres take a tree census--grouping the trees in ten's and having ten groups to equal one hundred. Count growth rings on the tree stumps (See Social Studies, Grade 3 and Science, Grade 2 for related activities).

4. Go outside and have each child collect a "set" of rocks, nuts, sticks, etc. to use as counters. If these are collected at the beginning of the year, they may be used throughout the year for use with number facts.

NUMBER CONCEPTS AND COUNTING (cont.)

Activities:

5. Use number and size concepts on the playground. Have each child count the number of main leaf veins in a leaf on a certain kind of tree. Compare these figures. Compare the number of veins of various kinds of trees. Pace off the playground area and compare this method of measurement with accurate figures and methods. Pacing can relate both to measurement and counting.

6. Compare Temperatures: Small children can get practice in counting by two's as they compare temperatures in sunlight and in shaded places outdoors, at the same place at difference times of day, or on succeeding days. Record these temperatures.

7. Devising "Tree Ring" Problems: The annual rings visible in a tree stump can be the basis for problems such as these:

   a. Count the rings to find out how many years the tree lived. If it is true that it was cut in 1964, then when did it begin to grow?

   b. Observe the injury to the tree that shows up in the seventh ring from the last. In what year did this injury occur? How old was the tree at that time?

8. Using crickets as "Thermometers": If the day's temperature is between 55 and 100 degrees, a cricket can help the children estimate the temperature with reasonable accuracy. Count the number of times the cricket chirps in 15 seconds and then add 40. (T.= C + 40)

## MEASUREMENT

Activities:

1. Outside the children may measure various things by using "personal" standards of measurement such as:

   length of shoe or foot
   length of arm
   hand span.

2. After the children are familiar with the unit of the inch or foot, they can go outside and measure some of the following things:

   length of various leaves
   height of various plants
   width of see-saw
   width of sidewalk
   perimeter of black-topped area

3. Discover the rate of growth of plants. Plant some lima bean seeds and measure the plants daily. You may also want to let the children each find a plant in the schoolyard to measure.

4. Use a one-inch beaker to measure rainfall. (See Science, Grade 2).

5. Go for a walk. Record what time you left and returned. Decide how long it took.

6. Measure:
   a. Wind velocity, temperature and precipitation
   b. Distance between trees and buildings
   c. Learn personal measurements to use as an estimate.
      Examples: hand span, pace, height, width of stretched out arms.
   d. Compare weight of different kinds of rocks of the same size.

MEASUREMENT (cont.)

Activities:

7. Illustrate some measures of Area: Use homemade measures to lay out on the playground a square foot, a square yard, or even a square rod. Simple measures can be made from strips or sections of newspapers, wrapping paper, cardboard, or adding machine tape.

8. Acquiring Standards of Length: Collect sticks of various lengths, ranging from less than an inch up to several feet. Label each stick. A.B.C., etc. and let the children estimate the length of each.

9. Estimating Heights by the "Stick Method": Have a child of known height stand at the foot of a tree or other tall object. Then have each of the other children move back about 100 feet and hold a stick vertically at arm's length in front of himself. Next, instruct each child to use his thumb to mark off on the stick what appears to be the height of the child standing at the foot of the tall object. Finally, by seeing how many times he can measure this distance on the tall object, have each child make a careful estimate of the designated object's height.

10. Estimating Distances by Pacing: The pacing method of estimating distances on the ground requires that each child know the distance he covers in one pace (walking step). To find the length of each child's pace, begin by measuring a 100- foot distance on the school grounds. Have each child walk this distance several times, counting number of paces he uses in walking the 100 feet each time. The teacher will have to find the pace of each child by dividing average number of paces into 100. Pace off baseball diamond, playground, school yard, etc.

COMPASS.

Activities:

1. Learn to use a compass: Have each child find an object directly north of him, walk to the object, then return to the starting point using only the compass.

DESIGN.

Activities:

1. Find main designs in nature:
   circle - sun, moon, berry, woodpeckers's hole
   zigzag - tree rings, edge of leaves, building and trees on horizon
   wavy - path of brook, soil
   straight - tree trunk, vein in leaf, blade of grass

2. Draw lines to show:
   how bugs fly
   how branches move in wind
   how clouds move in sky
   bark of trees, feather, stump

3. Draw a sound the way it might be put on paper using dots, wavy lines, spirals, zigzag lines (wind, dog's bark, bird's call, etc.)

COLOR

Activities:

1. Take a walk for the purpose of observing different colors in nature, such as the many shades of green apparent in grass, moss, and leaves". Different seasons of the year offer different colors.

SKETCHING

Activities:

1. Have children notice the apparent size of a distant object and then see how this apparent size changes as they approach the object. This will help them to understand perspective and to use it more effectively in art work. Having children use a small cardboard form to frame an area to be sketched from a distance and the same form in sketching a part of the same area when they are closer will enable them to more easily recognize the effect of distance on the apparent size of objects.

2. Bits of charcoal from a burned-out campfire can provide both inspiration and material for sketches. Use paper with a slightly rough surface. Demonstrate the method of making outlines with a piece of charcoal and shading the drawing by rubbing it with the fingers. Try drawing such objects as leafless trees.

CRAFTS USING NATURAL MATERIALS.

Activities:

1. Build up a "bank" of natural materials for craft work. Have the children gather such items as the following, with due regard for good conservation practices: seeds, twigs, leaves, fruit pits, stones, pebbles, straw, corn-husks, corncobs, pine cones, grain, bark, feathers, etc. Store the materials in covered jars or boxes.

2. Try making paints. Collect several kinds of rock soft enough to make a colored mark when rubbed on paper. Iron ore or rust will make a deep yellow or an earthy red: limestone, chalk, or white clay will make cream, white, or pale yellow; clay will make gray browns, soft blues, and dull browns. Clays can be burned to make their colors darker. Powder the rocks by putting those of the same kind together in a strong plastic or cloth bag and pounding it with a hammer, mallet, or large, hard rock. Sift the powder through wire screening if necessary; small pieces of rock that are screened out may be made into powder by grinding them between two stones.

   Mix some of the powder with water to produce a creamy consistency, and add about a teaspoonful of inexpensive mucilage per pint of paint. The amount of mucilage needed varies with different pigments. If paint rubs off of paper easily, more mucilage is needed. For "war paint", mix the powder with lanolin or face cream instead of water and mucilage.

   "Rock" paint might be used to tell a story in Indian pictographs, to paint Indian scenery for a play, to decorate pottery bowls, or to paint pictures.

3. If you can find natural clay suitable for modeling, dig it and roll it into small balls so that the foreign matter can be found and removed. Add enough water for thorough moistening and then compress the clay to remove air pockets. Let the clay "age" for a day or two so that it will be easier to use. If care has been taken to eliminate all air pockets from the clay, models made from it can be dried, glazed, and fired, or they can be dried and painted.

4. Make sand pictures using various colors of sand you can collect. Sketch a picture lightly on a piece of colored paper or cardboard. If colored cardboard is not available, paint the cardboard and give it time to dry. Paint one section of the picture at a time with an all-purpose glue or with rubber cement, and quickly sprinkle sand on it. Shake the excess sand from each section before working on the next section. The natural color of sand makes an effective contrast with a colored background.

CRAFTS USING NATURAL MATERIALS (cont.)

Activities:

5. Let children arrange various combinations of pebbles to portray animals. when a good arrangement has been achieved, the pebbles can be cemented in place with a strong, fast-setting glue such as airplane cement. Colored ink can be used to mark the pebbles to add features. A solution of equal part of white shellac and wood alcohol is effective in bringing out the colors of the pebbles.

6. Make leaf prints:

Blueprints - Begin by getting some blueprint paper from a camera supply store. Place a leaf on a piece of glass about 8 inches square. Put a piece of blueprint paper over the leaf and a piece of cardboard the size of the glass over the blueprint paper. Hold the cardboard and glass together tightly. In the bright sunshine, hold the glass toward the sun for about five minutes. Go inside and remove the blueprint paper. Dip it in a pan of water. Lay it out flat to dry.

Spatter print - Place newspaper over work area. Lay the paper to be spattered on cardboard, and pin the leaf flat to this, pins upright. (Leaf prints will be more successful if the leaf has been pressed for an hour or two.) Prepare poster paint the consistency of thin cream, dip an old toothbrush into the mixture, press against the side of the can to remove excess paint, and rub toothbrush toward you on a small piece of clean window screening held over the leaf. Spatter paint onto the paper all around the leaf. When dry, remove the leaf.

Crayon print - Place a section of newspaper on the work area to give soft surface. Lay the leaf on this with the vein side up. Place a sheet of ditto paper over this, hold carefully, and color in the same direction over the leaf area using the tip or side of a crayon. You may want to cut out along the leaf outline.

Ink-Print - Cut a piece of felt the size of the largest leaf on hand. Place felt on a board or glass and carefully pour on some ink until well moistened. Place leaf on this, vein-side down, cover with heavy paper and run a hand or roller over it carefully. Then lift the leaf very carefully. Place it on plain paper, and again roll or press. Be sure to permit thorough drying. If ink printing is well done, it is the best type for a scrapbook because it shows veining so clearly. Tubes of printer's ink from a stationery store are best for this, but not necessary. Green is the best color.

7. Grass baskets can be made from some long, [illegible]ly fine grasses gathered from a meadow. Use bunches of grass with [illegible]ffia to make small, sweet-smelling baskets. The grass, either green [illegible] partially dried, can be braided and sewn into shape, or it can be [illegible]ed and stitched with the "lazy squaw" stitch. (this stitch is produced by winding raffia twice

CRAFTS USING NATURAL MATERIALS (cont.)

Activities:

7. around the grass bundle and then stitching the raffia into the preceding coil.) In any case, start with a tight coil of the grass held in place with the winding material.

8. Collect various seeds or pebbles for making mosaics. The various colors and shapes will suggest a wide variety of designs and pictures. Put the pebbles or seeds on a cardboard or wooden backing with an all-purpose adhesive.

9. Snow sculpture and snow modeling appeal to children for many reasons, one of which is the fact that they can make figures that are life-size or nearly so. Several children can work together in gathering the snow and creating their "masterpiece." A person, an animal, a bird, a house, a piece of furniture, and many other things can be sculptured.

10. Find a spider web that is intact. Spray both sides of the web with white enamel. While the enamel is still wet, carefully place a sheet of dark colored construction paper so that it touches all parts of the web's lower surface, and then cut the strands supporting the web. The web will make a clear print on paper. This print may be used for study of the web pattern and of the kinds of strands that the web contains.

11. Make shadow boxes:

Cigar box - Tear the top off the box. Sand lightly if necessary. paint the outside a color to harmonize with the room in which it will hang. Paint the inside blue (for sky). Draw a design on paper first, to prevent errors. Plan the scene to suit miniature nature objects that are easily collected. For example, moss or lichen, small twigs, some pebbles, sand, shells, etc. Each object is glue to the floor or back.

Sardine-can shadow box- Paint the outside of the can. Glue a piece of blue craft paper to the inside bottom, or paint blue, for background. Glue tiny sprigs of dried grains or grasses, seed pods, etc. to this background. Run a piece of rug yarn or braided wool yarn around the outside rim and tie at the top, with which to hand the box. If desired place a piece of Saran Wrap over the can as "glass" before putting the yarn around the edge.

12. Create woodland scenes by using thick, interesting pieces of bark, twigs, mosses, or small rocks. Turn the rough side of the bark up as a base. Use blue poster paint to create a winding stream; glue small twigs upright as trees and add moss for leaves; add bits of moss, small rocks, etc. Children will have many more ideas of their own.

CRAFTS USING NATURAL MATERIALS (Cont.)

Activities:

13. Locate a good animal track that is clear and sharp. Carefully clear away twigs and rocks. Make a collar, slightly larger than the track, using a strip of cardboard and paper clips. Put the collar around the track, pushing it about half an inch into the soil. Prepare plaster by putting two cups of water in a can and gradually adding the cups of plaster of paris. Stir with a stick until the mixture is smooth and about the consistency of ice cream. (Adding salt slowly will hasten setting. Adding vinegar will slow the setting). Sprinkle talcum powder into track to help keep mud or sand from sticking to plaster. Pour plaster over track. Plaster should cover track completely and be at least an inch deep. Let it dry for fifteen or twenty minutes. Remove plaster gently and take off cardboard collar. Brush dirt from the plaster carefully. Casts may be tinted with poster paints while plaster is still moist, or with thinned oil paints when dry.

## NATURE GAMES

Activities:

1. CATS AND BIRDS One player, the cat, is blindfolded. The other players, the birds, are each given a number one through five. The birds scatter and settle themselves within easy hearing distance. The cat creeps along, stops and say, "Meow" one or more times. (The number of "meows" indicated the group of birds that is to answer.) The birds answer by giving a call. The cat chooses a nearby bird and tries to guess the player's name. If the player was not guessed in three tries the bird becomes the cat and is blindfolded.

2. TREASURE HUNT Divide the class into small groups. Give each group a list of objects that can be found outdoors. The first group to return with all the things on the list wins. (Or you can signal with a whistle for the groups to return and the group having the most items wins.) Some of the nature objects might be:
   Acron caps
   Evidence of an insect at work
   A rock containing two colors
   Two seeds that travel in different ways
   Pine needle.

3. LEAF RELAY. Divide the players into several teams. Have the players collect leaves from a number of different kinds of trees. Collect as many leaves from each tree as there are teams. For every team, make a leaf pile consisting of one leaf from each tree. Place this pile at a set distance in front of each team. The teacher calls the name of a tree, then says, "Go!" The first player in every team runs to the pile of leaves and finds a leaf from the tree named, and holds it up. A point is scored for every leaf named correctly. The leaves are returned to the piles and the players go to the end of the lines, and the game begins again.

4. AN ALPHABET SCAVENGER HUNT.
adapted to any natural area. Each child or group is to find a series of nature objects chosen so that for each letter of the alphabet there will be an object whose name (or some part of it) begins with that letter. (only five or ten letters may be used, if you wish).

5. STICKS AND STONES( A RAINY DAY GAME) Players choose partners. Each player needs a small rounded stone and ten or twelve small twigs about three inches long. Start with a small stone in front of each player. Players take turns, each placing one twig on top of his own stone. Any twig that falls off the stone is added to the player's original pile. The player to pile all of the sticks on the stone first is the winner.

6. INDIAN WHIRLABOUT Each player stands with feet together and with one light, three-inch stick on the back of his outstretched hands. On the signal "Go!" he sends the stick straight up from his hands, whirls about in place and tries to catch the stick in the palms of his two hands. After the child has mastered one stick, try two, three, four etc.

NATURE GAMES

Activities:

7. ACORN RUN All players but the one who is IT stand in a line, with hands held palms-together, in front of them. The one who is IT goes along the line with an acorn held in his hands and slides his hands between the hands of each player, leaving the acorn in one player's hands. This player must run to a designated goal without being caught by the other players. He need not start running at once, but must start before IT has reached the end of the line. IT does not chase him. The player who succeeds in reaching the goal line and returning without being tagged, or the player who tags him becomes the next one to be IT.

8. NUT RELAY Put the same number of acorns or other nuts into each of several bags, and place one of these bags on the ground about ten feet in front of each of several teams standing in relay formation. At the signal "Go!" the first child in each line runs up to his team's bag, kneels down, scoops up as many nuts as possible on the back of one hand, and walks back to the far end of his team's line. Nuts that fall off are left where they fall. Nuts that stay on the back of a player's hand until he reaches the end of his line count one point each. When everyone has had a turn, or when all the nuts have been taken from the bag, the team having collected the most nuts wins.

9. INDIAN STICK KICK. The players stand in a circle. The one who is IT drops two decorated sticks, about a foot long and on inch in diameter, between two players. Each player places the stick nearest him outside the circle, in a direction away from his opponent, and then kicks it around the circle in that direction. The first player to return the stick to his place is the winner and may drop the two sticks between two other players.

MUSIC

Activities:

1. MAKING INSTRUMENTS. Many natural objects can be used directly or adapted for use as rhythm instruments or other musical instruments. Pebbles, sticks, black locust seed pods, gourd, acorn caps, rocks, dried grasses, hollow reeds, and tree branches bearing dried leaves are among the objects that can be collected in preparation for making instruments for the rhythm or musical "band".

2. COMPOSING WORK SONGS: Children who know and enjoy work songs might like to try to compose songs to accompany their own work. Perhaps they could begin by writing new words to go with familiar tunes, such as that of "I've Been Working on the Railroad". Later they could try composing their own melodies for verses about work. Encourage the children to develop a rhythm and a tune to represent the particular kind of work being done.

SOCIAL STUDIES - Primary

THE HOME

Activities:

1. Take a walk to two or three neighborhood homes of children in your class. Observe and discuss parts of the house, evidences of children, etc.

THE SCHOOL.

Activities:

1. When introducing the text, At School, take the children for a walk around the school building to note size, structure, and various items around the school building.

2. Make a map of your classroom, then of your school building, and then take the children outside and help them make a map of their school k grounds.

SCIENCE - Grade 1.

**AIR**

**CONCEPT:** Air can be felt, but not seen. Wind is moving air.

**Activities:**

1. Outside look for evidences of air moving such as:
   the flag blowing
   Cloud movement
   trees swaying
   leaves floating down
   papers being blown
   smoke coming from chimneys, etc.

2. Have each child wet the back of his hand and then turn his hand around until he can feel a breeze. Then he may deduce that even though he can't see the air to tell which direction it's coming from; he can feel the wind.

3. Study the action of the wind outside. Look for places where leaves, scraps of papers, and sediment have been drifted into piles by the wind. Which way was the wind blowing? Was it a heavy wind? Why did the materials and scraps drift where they did? Examine more than one site and compare the drifting.

4. After a wind storm look closely at the earth or snow for the "foot" prints" made by the wind. Notice the patterns, direction, and places where there has been a small whirlwind.

5. To demonstrate the fact that air is present even though we can't see it, put several handfuls of soil into a gallon jar. Then fill the jar with water. Air will bubble up from the soil. Ask the children how this air helps plants grow. How does this benefit worms and insects? You can also do this experiment using a porous rock instead of soil. (sandstone)

SCIENCE - Grade 1.

AIR

CONCEPT: Air holds things up. Things fall more slowly when they have to push much air out of the way.

Activities:

1. Outside have one child stand at the top of the sliding board holding a piece of paper in one hand and a like piece of paper except it has been wrinkled into a ball) in the other hand. Drop them to the ground at the same time. Which one reaches the ground first? Why? Which form would be better to use if we wanted something to fly? Why?

2. Observe a bird in flight and at rest. Discuss the different positions of the wings for flight and rest. What does the bird do while flying to slow down? to turn? to come to a stop? Apply this knowledge to paper airplanes and commercial airplanes.

3. Make or buy a dime store kite. Help the children fly it in the field. While it's flying ask them some of the following questions:
   How does the kite's shape help it to fly?
   What keeps the kite up?
   Why does the kite seem to jump or drop?
   Why does the kite fly better high above the ground than it would next to the ground?
   What do we have to do to bring the kite to earth again?

4. Using some of their knowledge about airplanes and kites, let each child experiment in making his own style paper airplane or glider. Let them fly these outside and compare aircraft design and function. Write a chart about their conclusions

## SCIENCE - Grade 1

PLANTS

CONCEPT: Seeds and plants need water, food, and sunshine to grow well.

Activities:

1. Take the children for a walk in a nearby woods or just around the playground. Observe areas which are heavily overgrown. Ask the children why this has happened. What conditions of water, soil, and sunshine have made this a growing area? Then for comparison observe a sandy area or play area that has been worn smooth. Why haven't plants grown here? Also compare a shady area inside the woods if possible. Why are there many plants here?

2. Find a plant outside. Count the number of seeds on a single plant. Discuss why some plants "take over" a yard or field. On the other hand with so many seeds produced by a single plant, why aren't there millions of those plants. Do all seeds live to produce new plants? Why not? What happens to some of the seeds?

3. Outside collect a variety of seeds. Ask the children what happens to these seeds? Do they all fall just below the plant and sprout up? How do dandelions spring up in your yards after your moms and dads have killed all the dandelion plants in your yard? (Carried by the air.) How do other seeds travel from one place to another? (Animals, including man, and water.) Make a chart showing many seeds and the way they travel.

4. Plant lima bean seeds in several locations outside. (Shaded, dry, sandy, wet, good soil, and poor soil.) Have the children observe and chart each bean's progress. Help them generalize and apply this to the reasons wild seeds don't always grow in the location they travel to.

5. Find a small healthy plant outside. Cover it with a box with a little hole punched in the top for future observing. Let the children draw their own conclusions about the necessity of sunlight for plant growth.

6. Lay a small board outside on a grassy area. Examine a week later. Why is the grass yellow? Are some of the plants dead? Why? Was it just lack of sunlight? Let the children decide how they can further experiment to decide if it was just lack of sunlight or just lack of water or a combination of both.

SCIENCE - Grade 1.

PLANTS

CONCEPT: Most plants have roots, stems and leaves.

Activities:

1. Divide the children into small groups. Direct each group to find and select one plant. Then ask the groups to compare their plants. How are they all alike? (They all have roots, stem and leaves.)

2. Collect various leaves to compare the color, texture, shape and size. You may also compare stems and roots. Help the children see that although every plant has the same parts each plant is different from every other plant. We each have a nose and mouth and eyes yet we are different from each other.

3. Examine onion or tulip bulbs. Plant these and some slips from pussy willows or ivy. Not all plants begin their growth from a seed.

4. Cut a flower in half lengthwise to observe developing seeds at the base of the flower

5. Visit a greenhouse or commercial nursery. Have the children notice how proper water, soil, and sunlight are provided for each of the plants. Why are some plants planted in sand with little water? Why are some plants kept indoors? (Some grow better in the shade and some need more heat)

SCIENCE - Grade 1.

ANIMALS

CONCEPT: All animals need food, water, and homes.

Activities:

1. Look for signs of animal life in relatively undisturbed overgrown areas. Useful clues are: nuts, husks of nuts, hair, feathers, fur, nest, holes in the ground, tracks, and droppings. Discuss reasons that the area would or would not be used by animals. What protection does the brush provide? Where is the nearest source of food? Does more than one animal live here?

2. Locate some animal tracks either in a wet area or snow. (You can sprinkle flour on the ground the night before if the ground is too dry for good tracks.) Encourage them to try, by observation alone, to determine the following things about the animal:
   its approximate size and weight
   the number of feet it has
   the number of toes on each foot
   the length of its legs
   whether it was walking or running
   the direction it was going.
   Follow the tracks. Did the animal find some food? What? Did it meet any enemies? Who?

3. Take apart an old bird nest. (Find one that has been blown to the ground. Some birds use old nests that have been left in trees or bushes). Sort the materials - twigs, mud, thread, etc. Use a magnifying glass to examine the contents more closely. Count the separate pieces to determine how many trips it took the birds to build the nest. To impress the children with the birds' unique talent, let each child try to construct a nest.

4. Provide string, threads, straw, strips of cloth, and other materials in the Spring for the birds to use in constructing their nests.

5. Make a bird feeder. Let the children experiment with various foods and grains to see which birds like to eat which foods. Some suggested foods might be: sun flower seeds, wild bird seed, hamburger, suet, and pieces of fruit. Observe shape of beaks of birds that eat seeds, of those that eat meat. Why are they different.

ANIMALS (Cont.)

Activities:

6. Go to the pond at Veteran Acres or a nearby marsh. Collect frog eggs and tadpoles in a net. Also collect scum for food for the tadpoles. Observe them in the classroom as they progress into frogs. You may also use goldfish food to feed them.
   As the tadpole matures he changes in this order:
   1. his back legs emerge and grow
   2. his front legs emerge and grow
   3. his specialized tongue and lungs develop

   While his tongue and lungs are developing, his tail will gradually shrink. This is because his tail is his extra food supply, and while his tongue and lungs are growing he uses this food supply instead of eating. When his tail is gone, he is a frog. He will need insects for food then.

7. Visit a farm which raises either the usual variety of farm animals or specializes in chickens, minks, etc. Observe:
   Ways the animals provide for their young,
   Length of time the parent cares for its young, and
   The various types of food each animal prefers.

8. Raise a colony of ants. To do this fill a gallon jar with loose soil and sand. Collect your own ants outside at an ants' hill. Take a few ants that are above the ground, some from several inches below the surface, some from deeper in the ground, and also select a few eggs. In collecting from several levels you will be sure to have a good variety of ants for your colony - soldier ants, worker ants, etc. Put all of these in your jar. You will also have to provide several drops of water daily and food such as grains of sugar, crackers, pieces of fruit, and drops of honey.

9. Observe an earthworm in a gallon jar filled with moist, dark, loosely packed soil. When not observing it keep a piece of dark construction paper around the outside of the jar to simulate natural conditions for the worm. Not only will this activity help the children understand what animals need in order to live, but it will also lead to some interesting conclusions about soil formation and aeration.

SCIENCE - Grade 1

CONCEPT: Animals and plants react differently to seasonal changes.

Activities:

1. "Adopt a Tree". In September select a tree near the school which you can observe freauently during the school year. Observe the leaves changing colors and falling. After the leaves have fallen examine your tree for the buds which are already there for next spring. Watch your tree in the winter months too. Is it the home of some animal? Are there any tracks that tell of some other visitors to your tree? Early in the Spring watch your buds as they swell and open. Some buds develop flowers, some new twigs with new leaves, and some extend the length of the branch or trunk.

2. Record the outside temperature one day for each season. Keep this record for comparison and discussion.

3. Make a shadow study for each season. See activity #4 in the unit titled the SUN.

4. Take a field trip to Veteran Acres or nearby woods each season. Discuss the trees, other plants, the pond, and the presence or absence of animals and insects. Observe weather changes. Use a net strainer to get a closer look at pond life. Be sure to examine a small area of ground each season, too.

5. Take a census of the birds in the neighborhood. Do this in early Fall; in the middle of the Winter; and later in the Spring. Discuss reasons for migration.

6. Make a chart on which to note daily weather changes for each month. Compare one month from each season.

SCIENCE - Grade 1.

**THE SEASONS**

**CONCEPT:** In the fall crops are harvested and animals prepare for winter.

**Activities:**

1. Visit a neighborhood garden to see what happens to plants in the Fall. What will happen to these plants during the Winter? Will these same plants come up next spring? Why? Why not? What plants grow every season? (Trees) Why does a tree live so much longer than other plants? (Bark protection, deeper roots, etc.)

2. Look for Fall flowers turning to seed. Discuss how the seeds will lie dormant until the right conditions of water, temperature, and sunlight start them growing next Spring.

3. Examine several plants in the Fall to notice that the seeds have been formed. Make a chart displaying how various seeds are carried from one location to another by wind, water, and animals.

4. Watch some squirrels or other small animals as they scurry around storing nuts and seeds for the Winter months to come.

5. Visit a farm to see how the farmer harvests his crops and stores his grains for his farm animals. Let the children feel the thick coats of the sheep and other animals.

**CONCEPT:** In the winter some animals hibernate; trees rest and many plants do not grow.

**Activities:**

1. Observe tracks in the snow to determine which animals are still active in the Winter. Ask the children some of the following questions about the tracks:

   What direction was the animal going?
   How many toes on his front feet?
   On his back feet?
   How fast was he moving?
   Did he meet any other animal on his journey?

THE SEASONS

CONCEPT: In the winter some animals hibernate; trees rest and many plants do not grow. (cont.)

Activities:

2. Set up a feeding station for birds, to give the class an opportunity to observe the birds that are present in different seasons.

3. Catch snowflakes on pieces of dark colored construction paper. Examine them under a good hand lens. In what ways are all snowflakes alike? Different?

4. To stress the idea that temperature and weather conditions determine the growing season of plants, dig up a chunk of earth covered with snow. Bring it into the warmth of the classroom and wait for the plants to sprout. Discuss causes.

CONCEPT: In the spring plants grow, birds build their nests, and animals raise their young.

Activities:

1. In the very early days of Spring take frequent short trips outside your classroom to look for new shoots (even under snow) and insect activity. Make a chart of the flowers that bloom in the order that they open. Example: Crocus - March 27, 1967.

2. Provide strings, threads, and other materials for birds to use in building their nests. Watch a pair of birds build their nest and raise their family.

3. Visit a farm for a close look at the new animals that are born each Spring.

SCIENCE - Grade 1

**ROCKS**

**CONCEPT:** Rocks differ in color, composition, and hardness

**Activities:**

1. Take the children on a walk to any area where rocks are abundant. Have each child find one rock to take back to class. Have each child describe his rock and inspect it further. These questions will help his thinking:
   What color is it?
   Is it made of just one material or several?
   What shape is it?
   Is it rough or smooth.?
   Can you scratch it with your finger nail?
   Can you see different layers in it like a cake?
   Where did you find it?
   What does it look like to you?

2. Another day visit an area where you can find larger rocks (6-7 inches.) Places where they have just excavated for a building are good, or tops of hills that have weathered away top soil. Have the children work in small groups and select one rock for their group. Use the following chart to classify the rocks as to their hardness or softness:
   Rock Hardness Chart:
   1. A thumb nail scratches the rock, very soft.
   2. A penny scratches the rock. soft
   3. a knife scratches the rock. hard.
   4. The rock scratches glass. very hard.

3. Children this age love collecting rocks. So, let them collect as many as they like around their homes. Encourage them to collect a variety rather than thirty rocks of the same kind. Egg cartons make handy display boxes. Cracked rocks expose a fresh surface for examining. A mixture of half shellac and half wood alcohol will bring out the natural colors of the rocks

SCIENCE - Grade 1.

CONCEPT:Rocks are formed by fire, settling and extreme pressures.

Activities:

1. Read one of the simpler books on rocks. Discuss with the children the three ways rocks are formed. Then have them examine one of their rocks and determine how it was formed. Sedimentary rocks are very easily recognized because of the several layers. Classify the rocks into three groups. Those formed by fire, those formed by settling, and those formed by extreme pressures.

2. Take the children on a field trip to a local gravel pit. Observe the various exposed layers. Look for examples of sedimentary rocks. Look for other places where rocks have been formed through pressures in the earth's cryst.

3. Play guessing games with the rocks. One child holds his rock behind his back and describes it. Anyone who thinks his own rock is the same holds up his hand. Encourage them to give relevant clues.

CONCEPT:Fossils tell us of ancient plants and animals.

Activities:

1. What is a fossil? Show the children a fossil. (These are available through our science department.) Let them speculate as to what a fossil is and how it was formed.

2. Children may make their own fossils by using plaster of paris. Pour a mixture of plaster of paris and water in the bottom of a milk carton. Then put a dead insect or leaf that has been covered with vasoline on top of the plaster of paris. Cover with more plaster of paris. When it is dry, crack it open and remove the insect or leaf. Be sure to discuss how this process is different from the formation of real fossils.

SCIENCE - Grade 1.

THE SUN

CONCEPT: Shadows are formed by objects blocking out the light.

Activities:

1. Divide the children into small groups. Give each group several different materials such as glass, wood, plastic, paper, metal, etc. Have the children go outside to discover which materials make the best shadows. Discuss their conclusions.

2. Go outside to compare shadows of flagpole, posts, trees, persons, and buildings. Discuss the relative brightness of the sun and the darkness of the shadow being cast. Talk about the distortion of the shadow as compared to the object casting the shadow. Looking at the shadow, ask the children from which direction the light source (the sun) is coming. Conclude that the shadow falls in the opposite direction from the light source.

CONCEPT: The sun is a great star and always shining. Clouds sometimes obscure the sun-light.

Activities:

1. Take one large playground ball and one small tennis ball outside with your class. Have one member of the class take the large ball and go off several hundred feet. Have another child hold up the tennis ball and focus on it in a direct line with the distant playground ball. The playground ball will seem to be the same size as the tennis ball. Why does the playground ball seem so small? Now have them focus the tennis ball in a direct line with the sun. (*Caution: Be sure to tell the children not to look at the sun.) Why does the sun seem to be so small? Is it really as small as it seems? Let them do some research with your help and find out how big the sun really is. Is the moon larger or just closer than the sun?

2. Have the children observe a distant car. What size does it appear to be? How does the size seem to change as the car comes nearer? Examine other objects in the distance that appear to be smaller than they are in reality. What conclusions can the children draw then about the size of the moon, sun and stars? If the sun and the various stars are about the same size, why does the sun seem so much larger, and brighter.

THE SUN

CONCEPT: The sun is a great star and always shining. Clouds sometimes obscure the sun-light. (cont.)

Activities:

3. On a cloudy day discuss why we can't see the sun. Where is the sun? Conversely on a sunny day ask the children why we can't see the moon or the stars.

CONCEPT: The sun seems to move because the earth is turning. The earth turning gives us day and night.

Activities:

1. In general discussion find out what understandings and misconceptions the boys and girls have about the sun from their daily observations, older brother and sisters, etc. Then give them these two facts:
A. The sun is always shining.
B. The sun does not move.
Let them speculate as to the reason the sun seems to move over the earth. Use one of the models of the sun, earth, and moon to help clarify.

2. Outside have each child focus on a certain tree or other object. Then have each spin slowly on his heel to the right. As he turns to the right, what direction does his tree seem to be moving? Was the tree moving? What made it appear to be moving? Was it moving the same direction they were spinning: Now ask each to pretend that his tree is the sun and that he is the earth. Repeat the experiment.

3. Use a piece of chalk or a stick to trace the shadow of a child outside at 9.00.A.M., 12.00.P.M. and 3.00 P.M. Discuss why the shadow has changed and how it compares to the actual person. Help the children discover that the earth's position in relation to the sun has changed since morning and for this reason the shadow is different.

4. One day in the Fall, at a set time, measure the shadow of the flagpole or some other familiar object. Mark this with a stake. Do this again at the same time one day in the Winter and one day in the Spring. They may conclude that not only does the earth's position change daily but seasonly, too. Does this change have anything to do with the different weather of each season?

SCIENCE - Grade 1

THE FIVE SENSES.

CONCEPT: Our eyes see colors, shapes and sizes. Light is necessary to see

Activities:

1. Observe the following outside the classroom:
   shapes - trees, buildings, foot prints, leaves, clouds, bushes
   texture - bark, brick, cement, pine cones
   color - sky, grass, ground, insects, rainbow, objects at a distance
   design - butterfly, oil in puddle, veins of leaves, heads of flowers

2. Take a walk to a woods and observe how things in the woods are harder to see because there is less sunlight. While walking in the woods, point out various insects crawling on leaves or on the ground. Discuss how their coloring protects them from their enemies.

3. Play the game, "I see something green ....."

4. Examine several pieces of fruit of various degrees of ripeness - a green apple and a red apple; green grapes and purple grapes; etc. Ask the children the difference between each of the two fruits.
   Why are they different in color?
   What do the colors tell us?

CONCEPT: Distant objects appear to be smaller than they are. We can make objects larger by using the magnifying lens, binoculars, and telescope.

Activities:

1. Observe some object from a distance above the ground. (A ladder or school window with a high elevation are good.) Discuss the relative size.

2. Have several children stand about fifty yards away from the rest of the class. Have the other class members hold up their thumbs and sight the children fifty yards away.
   What size do the children seem?
   How tall are they really?
   Why do they seem so short?
   What conclusions can we make about the moon and the sun?

SCIENCE - Grade 1

THE FIVE SENSES

CONCEPT: We can hear many different sounds

Activities:

1. Take the children on a "SOFT SHOE" walk. Have them listen quietly for:
   weather - wind rustling leaves, trees moving
   animals - flies buzzing, crickets chirping, squirrels chattering
   people - children playing, talking, mowing lawns
   traffic - cars and trucks, horns, whistles.

2. Take a walk on the sidewalk, through the grass of the lawn, or gravel near the side of the road, fields of tall grasses, or leaves of a forest floor, and sand. Discuss as you travel how the various ground coverings sound differently when we walk on them. Which covering is the quietest?

3. Take the class outside before a storm. Let them describe the sounds they hear as a storm approaches. If they are properly dressed, let them remain as the rain falls and describe these sounds, too.

4. Try putting your ear to the ground to listen to approaching footsteps. Can they be heard better that way? Who might use this technique? (Animals, Indians).

5. Help the children construct some home made rhythm instruments. Go outside to gather seeds, pebbles, seed pods, acorns, gourds, dried grasses, fallen tree branches bearing dried leaves. etc.

CONCEPT: Everything has its own special smell.

Activities:

1. Take the children outside to smell:
   burning leaves
   the ground after a rain
   distant odors of cooking
   flowers and leaves
   a daddy long-legs
   freshly mowed grass
   earth being plowed
   tar on the streets.

SCIENCE - Grade 1

THE FIVE SENSES

CONCEPT: We can feel hot and cold, rough and smooth, hard and soft, wet and dry; and size and shapes.

Activities:

1. Take the children outside to feel the following:

| | |
|---|---|
| Warmth of the sun | bricks |
| dandelion fluffs | a breeze on their cheeks |
| bark of trees | rain or snow |
| dirt | metal of play ground equipment |
| mud | thorns on bushes |
| pebbles | pine cones |

2. Give the children a list of descriptive words such as: sticky, damp, scratchy, smooth, bumpy, etc. Then have them find several things that fit each word. This activity can be further extended by having each child put his objects into a paper bag. Then his classmates can feel the objects and try to guess what his secret word has been.

3. Because we use our hands every day in feeling things, they are not as sensitive to touch as other parts of our bodies. When experimenting with various touch sensations encourage the children to use other parts of their bodies - cheek, inside arm, etc. If possible, take them barefooted through the grass, in sand, on cement, and over pebbles.

4. Outside feel objects made of wood, metal, brick, and cement to notice different temperatures. Our forearms are much keener at feeling small temperature changes than our hands and fingers.

5. If the children have been caught in a heavy rain or a wet snow fall, have them describe how they felt when they were all wet. How does it feel to walk through a heavy rain? This is a good place to encourage descriptive words and increase vocabulary.

SCIENCE - Grade 1.

THE FIVE SENSES

CONCEPT: We can taste bitter, sweet, salty, and sour.

Activities:

1. Though the children should be warned about tasting everything they see, there are many things that can be tasted out of doors. Here are some of them:
   grass roots
   sweet onions
   radishes
   clean snow
   rain water
   mint leaves
   sweet clover
   wild berries (raspberry variety)
   crab apples

CONCEPT: We use all of our senses to explore the world around us.

Activities:

1. Have the children use all of their senses to "discover" things on a walk through the woods, or on the playground. Then have them describe what they saw, heard, felt, smelled, and tasted.

2. As a culminating activity to the investigation using all of their senses, let children roast marshmallows over a fire. Much fun can be had as they describe the fire's smell, feel its warmth, watch the flames, and enjoy the marshamallows.

SOCIAL STUDIES - Grade 2.

CONCEPT: Our neighborhood provides a "world" of adventure.

Activities:

1. Take a walk around the school neighborhood. Spend time discussing types of buildings, homes, and other landmarks in your neighborhood. After returning to the classroom you may want to make a "model" of your neighborhood. Use milk cartons for buildings, sawdust for ground, white paper for streets, twigs for trees, etc.

2. Have pupils go outside and make a simple map of the school yard. Devise a key to represent different objects (e.g. Circle for a tree, X for a flagpole, etc.)

3. See what building materials were used in constructing your school. How many different materials are there? How are these alike or different than those in the children's homes?

4. Take a field trip to observe construction of widened streets, new intersections, expressways, etc. Discuss reasons for activity in these areas.

5. Look at a telephone pole or fire dydrant. What does it "do for you?" Why is it there? From what materials is it made?

6, Let children discover what area in their neighborhood needs to be cleaned up. As a class project clean up this area. Discuss the importance of keeping our neighborhoods clean.

SOCIAL STUDIES - Grade 2.

CONCEPT: Safety is part of daily living.

Activities:

1. Take a walk around your neighborhood. Discover as many safety signs as possible. Discuss these. What other signs should be added?

2. Walk to a school crossing. If there is no sidewalk, be sure to walk on the correct side of the road. Find out how to cross the street properly.

3. Draw an intersection on the playground which is large enough for children to walk through. Signs to indicate cars, a policeman and stop light (one red and one green) should be made by the children before going outside. Assign some children to be cars, some to be pedestrians, one to be a policeman and two to be the stop light (one stop light should face north and one should face west). Place children in their positions on street and sidewalk and have them approach the corner, watching cars and stop light. The policeman will take anyone who breaks safety rules out of the game.

4. Have a fire drill. Show why windows are closed by burning two boxes -- one with holes to represent windows and one without holes.

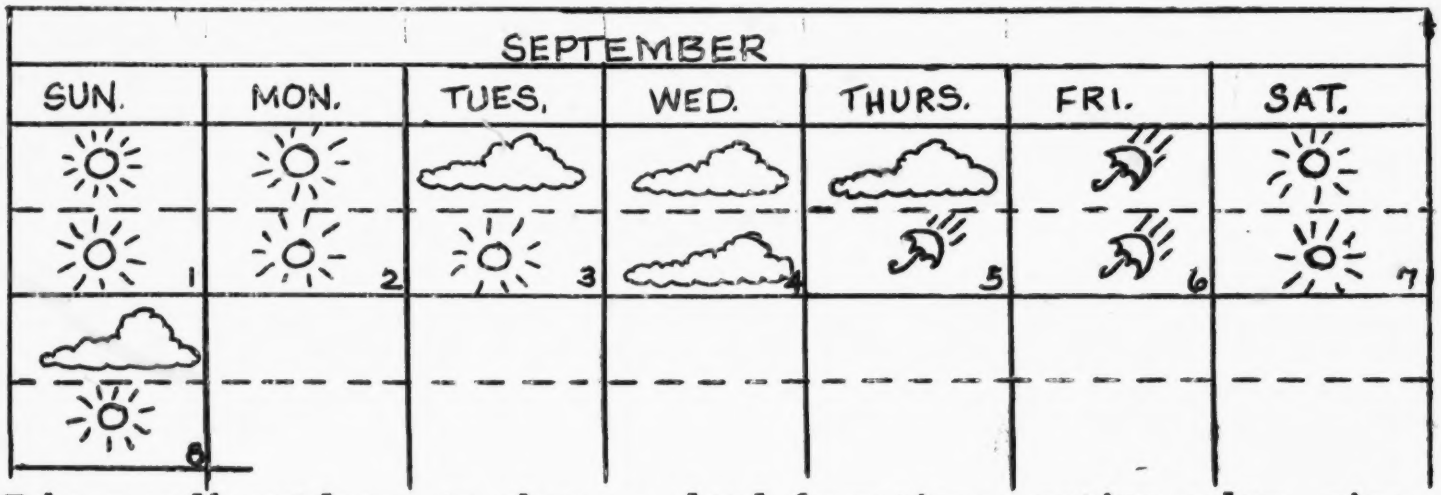
SCIENCE - Grade 2.

**WEATHER**

**CONCEPT:** Weather changes almost daily.

**Activities:**

1. Make a calendar on a large sheet of paper. Make big squares for each day and divide each square in half horizontally. Each might read the coming day's weather prediction and draw a symbol to represent it in the upper half of the square. In the lower half of the square draw symbol of what the weather really was. Temperature readings may also be recorded.




2. Take a walk outdoors to observe cloud formations, noting color, size and shape. Discuss various "objects" that are formed by clouds, and perhaps write a story or draw sketches of them.

3. Put one pan of water in the sun and one in the shade. Measure how deep the water is on various days. Discuss what happens to the water.

4. Have one or more thermometers on the playground in different locations. Go outside and record the temperature once or twice a day.

5. Lead the class to define weather as being the condition of the air; then learn as much as you can about air. To show that heat causes air to expand, cold causes it to contract, blow up a balloon in the heated classroom (winter). then take it outside. (balloon deflates, according to temperature.) Have the children figure out what caused it. Then blow up the balloon outside, where it is cold, and take it back into heated classroom.

6. Study the amount of rainfall. To make a fairly accurate rain gauge, get a one-inch beaker from the science department that can be marked with inches and quarter inches, using fine lines of nail polish. Wire the beaker to a board, leaving the holding wire loose enough to remove for emptying. Nail or wire the board to a fence post or other spot that is exposed to the sky from all sides. Check and empty after each storm. Compare the readings following several rains.

SCIENCE - Grade 2.

**SEASONS**

**CONCEPT:** Seasons bring changes.

**Activities:**

1. Take temperature readings as the seasons go on; discuss changes in tempera ture in the different seasons.

2. Put different materials outside in different places. See what happens to them as the seasons change (water in jar, paper, material, wood - see how sun, cold, damp, etc. makes them change.)

3. Go for a walk to see what flowering plants are in bloom in the fall and in the spring. Discuss the colors that are predominant in each season.

4. Go outdoors while it is snowing and have the children catch snowflakes on their coatsleeves. Look at them through a magnifying glass. (Cold panes of glass, taken from a freezer, may be used to catch snowflakes).

5. To show that plants are affected by shorter hours of daylight in winter, choose two plants that are as nearly alike as possible. Cover one plant for several hours each day and observe the results.

6. Look for evidences of animals getting ready for winter. Have children tell the stories they think the animals would tell.

7. In the fall observe some green plants that are growing in the schoolyard. Watch to see what happens to these plants in the winter and to see whether they come up again in the spring.

8. Encourage the children to make a survey of the different birds present during the different seasons of the year. Set up a bird feeding station. Keep a record of the birds seen and the dates. Make a clue chart for identifying birds that you see.

| SIZE | SHAPE | COLOR, MARKINGS | LOCATION | SONG | FLIGHT PATTERN | NAME |
|---|---|---|---|---|---|---|
| SPARROW | TUFTED HEAD | MOSTLY GREY WITH RUST | WOODS | WHISTLES "PETER-PETER-PETER." | | TUFTED TITMOUSE |

**SEASONS**

9. Make a "year 'round" tree study:

   a. Look at trees in the fall, before leaves start to fall. Observe that winter buds have already been made (so that tree can start growing again in spring).

   b. Choose one terminal bud and one lateral bud to watch through different seasons. Tie colored yarn or "twister" at base of each bud.

   c. Observe buds in winter.

   d. When buds start swelling in spring, make frequent observations to see terminal bud opening to add growth to twig or trunk - lateral bud opening to become new twig.

   e. Observe buds on maple tree that are neither terminal nor lateral. Have children figure out what they might be (flower buds).

   f. In spring, have children observe tree flowers - catkins or oaks, hickories, willows, etc.

10. Have each child keep an " observation record" of signs of fall, winter, and spring that he notes in the community. Include the date, time and place of the observation, and throughout the year compare the observations made in various seasons to note seasonal changes.

**EARTH AND SUN**

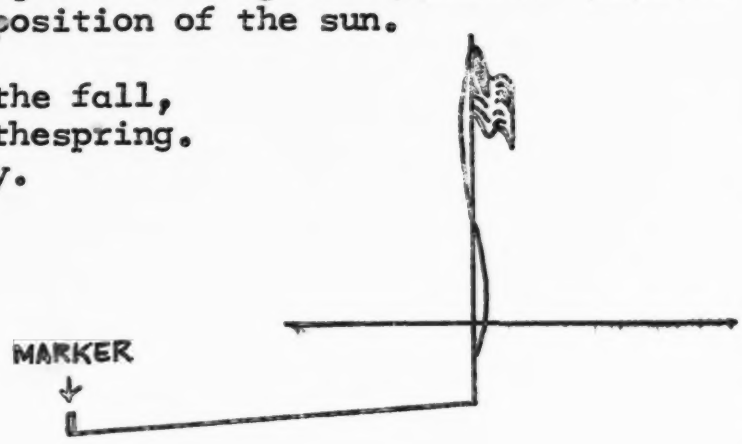
**CONCEPT:** The earth revolves around the sun and receives heat and light from the sun.

**Activities:**

1. Mark the position of a shadow on the ground with chalk or sticks. Note change in length and position after a few minutes or few hours.

2. Compare shapes of shadows to the objects casting the shadows. Observe how shadows fall according to the position of the sun.

3. Mark the shadow of some object in the fall, again in the winter, and again in thespring. Do this at the same time of the day. Observe the different positions.

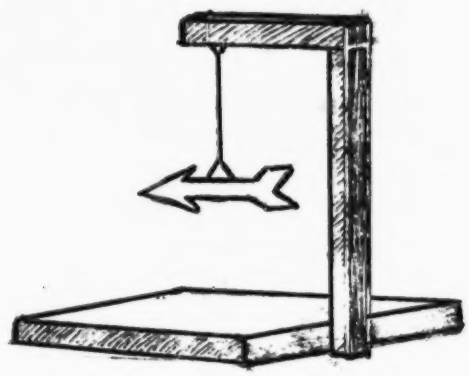


**EARTH AND SUN(cont.)**

**Activities:**

4. Make a compass:

First cut an arrow out of cardborad. Then magnetize a darning needle by stroking it with a bar magnet. Rub the S pole of the magnet along the needle fifty times from eye to point. The point of the needle will become the N. pole.
Thrust the needle through the arrow. Put the needle point at the point of the arrow. Then with thread suspend the arrow from a stand. The points of the needle and the arrow will swing to the north. (Be sure there is no iron nearby.) A compass needle, remember, is a small bar magnet.



5. Have the children take a compass outside on the playground. After locating north, south, east and west, put up a marker that indicates north. Have children tell what direction a certain object is from where they are standing.

6. Select a tree, slide, or some other object on the playground as a "direction marker." Look at the sun first thing each morning. On what side of the marker do you see the sun? Just before school is dismissed in the afternoon take the class outside to look at the position of the sun. On what side of the direction marker do you see the sun now? Make the observation for three or four days. Conclude that the sun is always in the east in the morning and in the west in the afternoon.

7. Have the children draw maps that show the way they get to school from their homes each day. Be sure the maps show the directions they take.

8. Feel the ground on various days to see if it is warm, cool, etc. Take temperature readings on the ground, in the sun, in the shade, and on the blacktop.

9. Take the class outside on a sunny day. Hold a magnifying glass in the direct rays of the sun, so they focus on a piece of paper. Keep this position until the paper begins to burn.

SCIENCE - Grade 2.

SOIL

CONCEPT: There are many different kinds of soil made up of many different things

Activities:

1. Find some soil from various places (schoolyard, garden, road). Put each kind in a jar. Compare colors. Look through a hand lens and see what particles compose the soil (pebbles, roots, leaves, sand, etc.)

2. Smell the soil to see if it has an odor. Feel ground in different places and discuss differences (cool, warm sandy, sticky).

3. Compare the size of soil particles. Shake up soil in a jar and let it settle.

4. Take the class to an area where a vertical profile of the soil is available. Study the soil layers.

5. "Make" soil by rubbing 2 rocks together. Try "making" soil by breaking up crumbly rock. Put cloth around the rock while breaking it to avoid injury. Plant some seeds in these and other soils and compare results.

6. Get some topsoil and put it in a large jar. Go outside (after a rain is a good time) and collect some earthworms to put in the jar. Put the jar in a dark place and leave it for a day or two. Discover the worms making tunnels. Then put some water into the soil. Observe the worms.

7. Go outside and dig in the soil. Notice what is helping to break up the soil (insects, worms, roots).

8. Take pupils around the schoolyard right after a rain to see what water does to soil. If there is a ditch nearby, collect some ditch water in a glass jar. Take it to the classroom and let it settle. Discuss the particles in this soil.

9. To build or reinforce the concept that decaying matter helps soil, have children walk on well-trodden path where there is no decaying matter (or very little). Have them describe how it feels. Then have them walk on soil in woods, where humus has made soil spongy. The spongy quality helps soil to soak up water, let in air, and let roots grow.

SCIENCE - Grade 2.

**PLANTS**

**CONCEPT:** There are many kinds of plants. These plants grow and reproduce.

**Activities:**

1. Collect and compare many kinds of seeds - kind, color, size etc.

2. In the fall plant bulbs of spring flowers. Cover them with dry leaves and watch them "peek through the soil, grow and bloom in the spring.

3. Take walks to various areas (meadow, forest, schoolyard) and observe the different kinds of flowering plants in each area.

4. Take a trip to the farm. Watch the farmer harvest different kinds of grain. Discuss how these grains are used.

5. Dig a small plot in a corner of the schoolyard. Plant a variety of seeds. See which ones grow the fastest. How do the plants differ? How are they alike? Learn proper care of the plants and soil. Discover what happens after the flower of the plant dies.

6. Explore to see what plants are growing in shady areas, sunny areas, etc. in the schoolyard. Try to discover why they are growing where they are.

7. Plant several bean seeds in a row. Choose two that are about the same size (this may be a lesson in measuring). Cover one with a box for several days. Observe what has happened to the plant and discuss why.

8. Find a number of plants of the same kind in different stages of growth. This should provide understanding about plant development.

9. Discuss the various ways seeds "travel." (wind, water, animals, people) Collect seeds carried in each of these different ways.

10. Find a dandelion plant. Dig it up in the fall to see the large root that stays alive all winter. Put the dandelion in a pot of soil and keep it in a cool, dark place through the winter. Observe the growth of the plant in the spring. Be sure to observe the dandelion seeds.

11. Grow a lima bean plant. Dig it up carefully and wash the roots. Use some red ink to color some water, put the plant in the water, and observe what happens to the water.

**PLANTS (Cont.)**

**Activities:**

12. Compare plants taken from different environment.

    a. Put some clean sand in a jar. Put in some water from a pond. Add some of the pond plants. When the plants are growing, you may want to add some snails and one or two small fish. Keep the jar in a cool, light place.

    b. Gather a few small rocks and some sandy soil and put them in a glass container. Set some small desert plants. Keep the desert garden in a dry, sunny place. Water it lightly every three weeks.

    c. Get a glass container and put some pieces of charcoal in the bottom. Cover the charcoal with sand. Collect some damp soil from the woods to put over the charcoal. Dig some small plants from a damp, shady place. (Dig up some of the soil along with the roots.) Make a hole for each plant. Fill the hole with water and plant the roots and soil in the holes. Cover with glass. Keep in the shade.

13. Plant some bean or pea seeds. Observe the various phases in the life cycle. Then plant some of the seeds that have been produced by the original "parent" seed.

14. Discuss non-flowering plants and reproduction by spores. Collect some of these non-flowering plants that have spore cases that are easily seen (ferns, mushrooms - children love puff-balls, - lichens, etc.)

15. Gather some willow twigs at a pond (if permissible). Put them in a glass of water in the classroom and watch the roots develop. (This is another means of reproduction.)

**TREES.**

**CONCEPT:** There are many different kinds of trees that grow and change.

**Activities:**

1. Study bark- pattern, texture, and color.

2. Gather leaves and compare shape, color, and size. See how many different colors (in all) can be gathered.

TREES (cont.)

Activities:

3. Plant small seedlings of different trees. Give them proper care. See which kinds grow the fastest.

4. Look at the overall shapes of various trees. Draw simple shapes (triangle, half circle, square, etc.)

5. Look at a stump. Count growth rings. Try to figure out how the stump was cut and what it might have been used for.

6. Choose a tree in the schoolyard or nearby to observe throughout the year. (See SEASONS #9 for complete direction).

7. As a class project, have the children collect leaves. Press them between newspaper weighted with books. After several days, a waxed leaf collection may be made by placing pressed leaves between sheets of waxed paper and ironing with a warm iron. Mount and label the leaves. (Clear contact paper may be used instead of waxed paper.)

8. Try to find leaves of many different colors on the same tree. Press several of these and compare them.

9. Make leaf prints. (See ART # 6)

10. Begin to learn to identify trees. Make a clue chart.

| LEAVES | BARK | BUDS | SHAPE | FLOWERS FRUITS | DISTINGUISHING FACTORS | NAME |
|---|---|---|---|---|---|---|
| SHAPE<br>SINGLE or COMPOUND<br>COLOR<br>TEXTURE | COLOR<br>TEXTURE<br>PATTERN | SHAPE<br>HOW PLACED ON TWIG | | SEEDS<br> <br>PODS<br>CLUSTERED or SINGLE | THORNS<br>SHAGGY BARK<br>TWIGS | |

BUILDING MATERIALS

CONCEPT: Trees provide lumber for building. Other building materials such as Iron, concrete and glass come mainly from rock formations.

Activities:

1. Take a trip to a new building and see how many different kinds of material are being used.

BUILDING MATERIALS (cont.)

Activities:

2. Walk around the school building and discuss the various materials used in the construction of the building and the playground.

3. Visit a lumberyard. Trace various characteristics of a tree to a board, such as the grain, knotholes, color, etc.

4. If possible, watch the cutting of a tree from a safe distance. If the men who cut the tree are willing, have them cut a cross section so that the class may study it. Pins may be used to mark annual rings indicating important events in a particular year of the tree's growth (the year the class started school, the years the children were born, the year the school was built, etc.)

5. Rub two small rocks together. Look at the sand, Feel it. Compare the color of the sand with that of the rocks. Discuss various ways this sand might be used for building materials.

6. Visit a stone quarry or gravel pit. Observe various rock formations.

7. If there is a cement mixer nearby, watch it at work. Note the various materials used in making cement and the various ways the cement is used after it is mixed.

ANIMALS

CONCEPT: All animals, regardless of their classification, grow, change and reproduce.

Activities:

1. Take the children outdoors for the purpose of finding as many different animals as possible. Return to the classroom and make a list classifying these according to mammals, birds, fish, amphibians, reptiles and insect.

2. In the early fall look for a caterpillar. Bring it into the classroom, along with some of the leaves or plant fibers on which it was feeding. Put the caterpillar in a jar with its food. Observe it spin a cocoon or chrysalis. Put the cocoon or chrysalis in a box in the classroom, watch it emerge in the spring.

ANIMALS (cont.)

3. You might catch a butterfly or moth itself. Nets can be made from an old nylon and the wire of a coat hanger. After the butterfly or moth is caught, place it in a large jar with a twig with its favorite leaves. Be sure you have proper food for it. "Perhaps" the butterfly or moth will lay eggs and the children may then have the opportunity of watching the caterpillars hatch.

4. Find a rotting log. Peel off the bark to see what lives underneath. Use hand lens.

5. See what animals live in the schoolyard. Roll over rocks to see what lives underneath; check for holes in the ground; look for signs on plants and fruit where insects have been eating.

6. Go to the pond. Use a net to gather pond life to study. In the spring try to collect some frog or toad eggs to put in a jar and take back to the classroom. Watch the life cycle of the frog or toad. As the tadpoles begin to turn into frogs (or toads) they need a stone or stick projecting out of the water to rest on and a bit of lettuce for food.

7, If you find a bird's nest that has blown to the ground, bring it in and plant it in a flower pot, covering it with ½ inch of soil. Keep it moist, and observe what begins to sprout.

8. In order to observe birds more closely, try to put bird feeders outside the classroom windows and put feed out in the winter. You may want to make a Christmas tree for birds by putting your Christmas tree outdoors after Christmas and tying bits of apple and suet to its branches.

9. Make plaster casts of birds' and animals' tracks from tracks that are clear and sharp in mud, dirt, sand or hand-packed snow. (See ART # 3).

10. Watch ants come and go from an anthill. Sometimes you can find trails that the ants make. Try to find an ant colony (look under logs, rocks, etc.) Look for the various stages of development. (egg, larva, pupa, adult). If an ant mound is available, carefully dig it up and put it in a glass jar. Observe the ants reconstructing their tunnels.

11.. Find a bird's nest. If possible, watch the birds hatch. Watch their growth and development. Note how the parents care for their young.

12. Obtain permission to have the class observe the feeding of newborn animals at homes of children who have pets which have young.

**ANIMALS** (cont.)

13. Visit a farm to observe various ways animal mothers protect and care for their young.

14. Make a native aquarium by taking water and plants from the pond. After the aquarium is in the classroom and the water has settled, observe it for animal life. A magnifier is useful. You may then want to add some other "native" animal life.

15. Take children out to get soil and plants for a terrarium. Get some small earthworms. Be sure all plants and animals can live in the same environment - that is, all shade-loving, woods plants or all sun-loving.

SOCIAL STUDIES - Grade 3.

**CONCEPT:** Maps show shape and size.

**Activities:**

1. Draw a map of school grounds showing the size of the buildings, etc. Do this by pacing and use of compass.

   Sketch a map of the school grounds to show areas that are similar to the forests, prairies, arid land, cultivated land, moist lands, and other special regions.

2. Make a rough map of several of the blocks surrounding the school. Indicate by means of symbols the outstanding features of the area. (Are there any points of historical significance: Where did the old school building or the original portion of the present one stand? Which are the oldest houses in the area?)

**CONCEPT:** Man relates to his environment

**Activities:**

1. Visit a farm to observe the farm's contribution to the economy of the area. What crops are raised? Which ones are used on the farm? Which ones are used by city people? In what other ways does farm life contribute to the life of the whole area?

2. Study places of interest in ralation to community life: a monument, park, or site of the first building in town. Talk to an old-timer about the natural features that led people to locate on the particular site. What natural advantages did it have? Have any new natural resources been discovered to stimulate growth of the community?

3. Compare insect activities with human occupations: Ants are a good example. Ask such questions as these: What insects would be diggers of tunnels? (corn borers, bark beetles) What insects would be utility workers? (Fireflies) Mason? (mud-dauber) Paper-makers? (paper wasps, hornets)

CONCEPT: Man relates to his environment (cont.)

4. Study water sources. (rivers, streams, springs, pumps, water tower, lakes, ponds). Follow a "drop of water" from its source to the faucet.

5. Prepare and use flour. Raise a small section of wheat. With rocks, pound the grain into flour. Separate the bran (seed coverings). Make bread or pancakes.

6. Take a walk in the neighborhood. Discuss wires underground and above. Discuss objects along the way.

CONCEPT: Time changes man's environment.

Activities:

1. Examine an old cemetery and draw conclusions about the past from what is observed. Discover why the graveyard was abandoned. Discover evidence of epidemics in certain years. Look for signs of an old church. Determine age span of people in earlier days. Secure permission to visit the cemetery from authorities in charge.

2. Study a tree stump record - when cut, age by rings, how old the children were in comparison to the tree, etc. From old newspaper, discover historical events that have taken place during the growing time of the tree.

3. Observe old buildings and tell how they might have been built.

4. Study topsoil. What is topsoil composed of? How thick is it in an undisturbed area near the school? If it takes 300 years to make an inch of topsoil, what has gone on in this spot since the first soil was formed?

SOCIAL STUDIES - Grade 3.

CONCEPT: Geography is the study of land forms.

Activities:

1. Explore a lake shore. Look for formations resembling bays, peninsulas, capes, and so on. Draw a crude map of these "discoveries". Discuss why many communities are near bodies of water.

2. Make a man-made river system by placing a block of ice on a pile of earth. Permit the sunlight to melt the ice. Look for channels, moving rocks, water falls and deltas. Relate the understandings gained to soil, crops, climate and industry.

SCIENCE - Grade 3.

MOON, STARS AND PLANTS

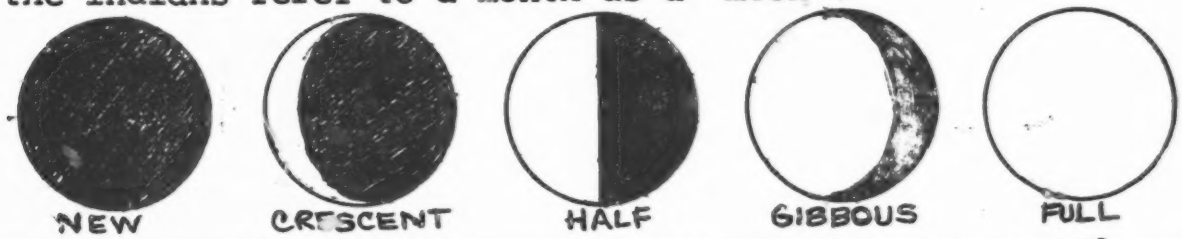
CONCEPTS: As the moon moves around the earth, its shape and position seem to change.

Activities:

1. Does the moon move? On a clear night, choose a window from which you can see the moon. Line up the edge of the window frame with an object outside, such as a telephone pole. Mark the moon's position on the window pane with a piece of tape. Half an hour later observe and mark it again. What is happening?

2. Learn to tell direction by the moon. In what direction does it rise? In what direction does it set? Does it rise and set in the same places each season?

3. Keep a calendar of the moon's phases. How are they caused? Why did the Indians refer to a month as a "moon"?




4. Watch an eclipse of the moon. How are the moon, earth, and sun lined up to cause this eclipse?

CONCEPT: Some of the moon's surface features can be seen.

Activities:

1. Identify surface features through a spotting scope, binoculars, or a telescope.

2. The next time the moon is full, look for the man in the moon, the old man with his bundle of sticks, the jumping hare. Why do people see "pictures" in the moon? Relate these "pictures" to craters and other surface features.

SCIENCE - Grade 3.

MOON, STARS AND PLANETS

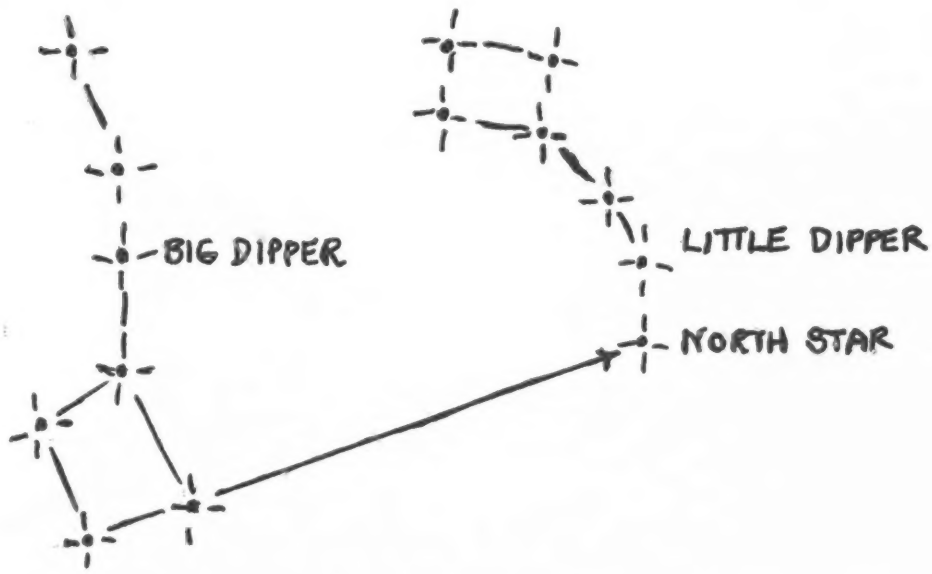
CONCEPT: Stars are huge, hot suns.

Activities:

1. Study the stars. Locate the constellations and learn the stories and legends about them. (The children may enjoy creating a legend related to this experience.)

2. Are stars always in the same place? Go outside on a clear night. Choose a bright star. Move around until the star is just above a chimney or tree. Mark the spot where you stand. Go back an hour later. Is the star in the same place? If not, in what direction has it moved?

3. Where is the North Star? Face the magnetic north pole. Find the Big Dipper. Find the stars with the arrow through them in the picture below. The North Star is at the end of the Little Dipper's handle.




4. Learn to tell directions by the sun. Where does it rise and set? Where is the sun at noon? Does Daylight Savings Time affect the position of the sun? Does the position of the sun's rising and setting change each season? Why or why not?

SCIENCE - Grade 3.

EARTH'S SURFACE

CONCEPT: There are many kinds of soil

Activities:

1. Compare colors and textures of soil in different places. Why does an anthill look different in color than the ground surrounding it? Are there different colors and kinds of soil in a creek bed?

2. Examine soil with a hand lens. Separate the parts of soil into piles of the same material (pebbles, roots, leaves, sand, etc.) From where might each of these have come?

3. Squeeze samples of different kinds of soil together to see if they form a ball. What is in soil to hold this ball together? What might happen if soil is under pressure for many years? Note that when sand is compressed it forms sandstone.

4. Compare types of plant growth in various kinds of soil. Are they large or small?

   Produce soil by breaking up crumbly rock. For protection put it in a cloth bag first. Plant some bean seeds in it and also in other types of soil. Compare the results.

CONCEPT: Special care must be given soil to enrich plant growth.

Activities:

1. Find out if any fertilizers are used on the soil around the school

   Experiment with two plots of ground outdoors. Fertilize one but not the other. Plant the same type of seeds in each plot and compare growth.

2. Observe a farmer preparing his fields for spring planting. Does he plant the same crop in the same field each year? Does he add any thing to the soi;?

EARTH'S SURFACE

CONCEPT: Soil is sometimes lost.

Activities:

1. Observe a dry creek bed. Notice what is at the mouth of the bed. What was dropped by the water first? Second? Last? How has the creek affected the surrounding area? Look for flood plains on the sides of the creek bed.

2. Compare erosion at different times and places before, during, and after a rain. Notice evidences of erosion: deltas, gullies, exposed roots, etc. Plan a class project to eliminate erosion on school grounds.

3. Discuss how grass keeps soil from washing away. Pour water on sloping grassy areas so root systems of grass can be seen. Compare a muddy bank to a grassy one.

4. Look at a piece of sod to show how grass is one of the best holders of soil. How does grass spread?

5. Help children examine roots of various plants to find how they can hold water.

6. What effect does wind have on soil in your area? Observe the school grounds during a strong wind. How does a windbreak affect wind erosion? What happens in an open field?

CONCEPT: Clay is made of fine particles of rock deposited by water.

Activities:

1. Examine and find out how the bricks in the school were made. This study can be related to the experiment on page 65 in Science Far and near, Grade 3.

2. Dig clay from stream beds, lake beds, or excavations. Remove foreign matter. Mix in one tablespoon dextrin or Dexin to help in hardening. Mix well, add enough water to make a thick modeling clay. Keep clay covered with wet cloth until used.

SCIENCE - Grade 3.

**EARTH'S SURFACE.**

CONCEPT: Minerals come from the soil. These minerals are used by plants and animals.

Activities:

1. Gather several kinds of rocks. Pour some coca-cola or vinegar on them. Those that bubble contain limestone.

2. Crack a rock such as grantie and notice the small pieces of different colors; these are different minerals.

CONCEPT: Rocks are affected by heat, cold, weather, and water.

Activities:

1. Point out the spaces left between sections of cement in sidewalks and highways. Why are they there? What is expansion?

2. Put granite, sandstone, and cement rocks of about the same size in water for a period of time. Note the results. Put these three types outside during freezing weather. What happens? How do certain properties of rocks relate to the climate in which they are used? Discuss various building materials in your community.

3. Compare rocks in the parking lot or on the school grounds to rocks along the creek or pond. What effect has water had on rock? Which are more rounded and smooth? Why?

SCIENCE - Grade 3.

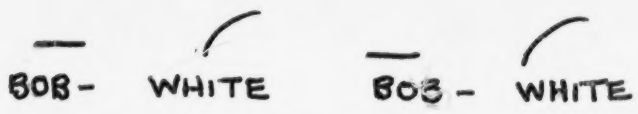
SOUND

CONCEPT: The kinds of sound we get depends on how fast something vibrates and how tightly something is stretched.

Activities:

1. Take a hike into the woods. Be very still. What sounds are easiest to hear? High or low?

   Draw schematic diagrams of the sounds you hear. For example, a bobwhite might have this kind of call:

2. Animals have different ranges of hearing. See what effects certain calls or sounds have on various animals and insects: blow on leaf edge or blade of grass - strum wire of fence.

SCIENCE - Grade 3.

INSECTS

CONCEPTS: Insects have certain characteristics.

Activities:

1. With a string, mark off a square foot of soil in different areas. Count and compare the number of different insects. How are they alike? How are they different?

2. Find insects under logs and rocks, in tree bark, etc. Why do you think they live under and in these places?

3. Observe plant galls and the insects that produce them.

4. Find a spider and compare it to an insect. What are the differences?

**POND LIFE**

**CONCEPT:** Not many plants and animals have features adapted to living in or near the water.

**Plant Activities:**

1. Compare leafstalks of water plants with those of land plants. Notice which are soft and lacking in woody tissues. How does the water help the water plants to hold their leaves up to the light?

2. Examine pond plants under a microscope. Do all of them have tubes? Why or why not?

**Animal Activities:**

1. Make plaster casts of animal tracks around the pond. Compare these tracks with those of other animals in the area. How can we relate these tracks to a balance in nature? What are the eating habits of these animals? (See Grade 6 Science Book for information concerning plaster casts).

2. Study how animals protect themselves. What kind of body coverings do they have? What color are they? Are they warm or cold-blooded?

   Make a visit to the same pond during each season. How does it change? Are animals' homes different? Are there any animals that change color to match the surroundings which appear during different seasons?

3. Observe the homes of animals. Look for them in trees, under brush, in water, etc. How do beavers make their homes? Are there any at Veteran Acres? Where might you find a mole? crayfish, frogs? snails? ducks?

4. Observe snails. How do they travel? Are they always near water?

5. Make a bird survey. See how many different kinds of birds live in the area. Can you identify them?

POND LIFE (cont.)

6. Make a feeding station near a pond. Using a pair of binoculars, observe the animals that come to it. Identify them and keep records.

7. Observe ways birds get food. How are their bills helpful? How are their feet helpful? Do birds have good eyesight? Find evidence for your answers.

8. Observe the various types of feet that birds have. Ducks, sparrow, crane. Compare the feet of water birds to those of birds living basically on land. Why do ducks have webbed feet? What purpose is there for cranes having long legs.?

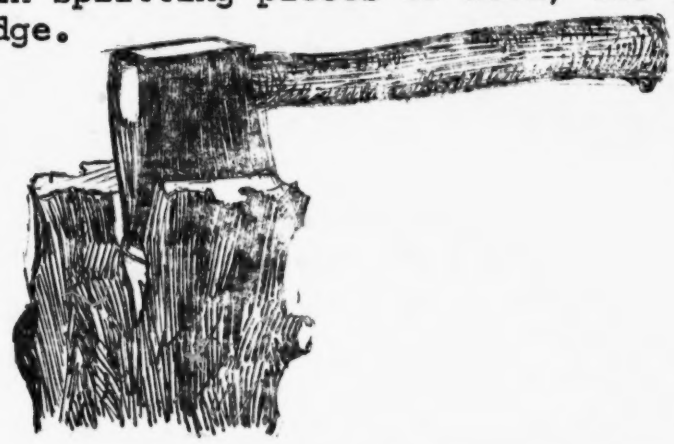
9. Observe turtles, snakes, raccoons, muskrats, frogs, etc. observe eyes, body covering etc.

MACHINES

CONCEPT: Machines are tools of work.

Activities:

1. Recognize some simple machines: examples are: the woodpecker's bill acts as a wedge in splitting pieces of wood; the woodsman's ax illustrates the wedge.



2. Levers: oars are used to row a boat; a fishing pole or rod operates as a lever in the hands of a fisherman; a person lifts something and his arms act as levers operating with the elbows as fulcrums; a seesaw illustrates the laws of the lever.

3. Remove an object trapped beneath a fallen tree. Use a pole as a lever in releasing this object.

SCIENCE - Grade 3.

**TREES**

CONCEPT: Trees have three main parts: the crown, trunk and roots.

Activities:

1. Study the leaf factory. Note sizes of leaves on various trees. Why do they differ? What ingredients are needed to make food for the tree? Compare coniferous and deciduous leaves.

2. Examine a telephone pole thoroughly. What kind of tree is it? About how old do you think it is? Why? How high is it?

3. Study various kinds of roots. Look at a section of the root under the microscope. Roots exposed by erosion good for observation.

4. Cut a slice of a stem(or cross-sections from several types of trees). Observe it under a microscope to see the tubes. What is their job?

5. Make a cast of a leaf. Find a cardboard box large enough so that the leaf can be flat in it. Put a layer of modeling clay in the bottom. Press the leaf down into the clay. Remove the leaf. Pour plaster of Paris paste into the box. Let it harden. Take out the block of plaster. It should have a leaf cast on the other side. Paint the cast with water color when dry.

CONCEPT: Trees grow and change:

Activities:

1. Observe a woody plant (tree, shrub, or vine) throughout the year. note seasonal changes. In spring decide which buds will be flowers, and which ones contain new growth,for the tree. Measure twigs at different parts of the plant several times during the spring season

TREES (cont.)

Activities:

2. With permission and/or discretion, cut the top of a main stem from an elm, box elder, or tree of heaven after the leaves come out in spring. (It might be just as well to do this with a young sapling.) Observe the changes over several weeks' time.

3. Observe trees in the school yard and in a woods. Have their shapes been changed by crowding, storms, insects, poor soil, etc? Find effects of people, animals, sunlight, shade, wind and water on plant growth.

4. Look at leaf scars under a magnifying glass. What causes the tiny dots? Why do leaves fall?

5. Keep records of heights of small trees with strips of colored paper by gluing the strips to a piece of cardboard to make a growth graph.

6. Take out all plants in a section of land that won't be disturbed. water it. See what comes up. (This might be just a square foot or square yard of ground which will not be easily accessible to other children.)

CONCEPT: There are many kinds of trees in our community.

Activities:

1. Take a walk in the school yard and nearby vicinity. Discuss the different trees. Notice that trees don't look alike even from a distance. How do the shapes differ? Shapes can especially be noticed in fall and winter. (See Art section).

   How are the leaves different? flowers? fruit? twigs? branching? bark? Use the five senses in describing these. Also jot down good descriptions children use. (See Language Arts section for follow-up)

TREES

CONCEPT: There are many kinds of trees in our community (cont.)

2. Make clue charts for identifying trees. (Curriculum Enrichment Outdoors pp. 121-122).

3. Observe trees of the poplar family Note stem shape and leaves. Why does it take little wind to make the leaves move?

4. Collect tree leaves - for the sake of conservation, each child might only collect one leaf from each kind of tree. Make waxed leaf collection by placing leaves between waxed paper sheets and pressing with a warm iron. (Clear contact paper may be used instead of waxed paper.)

   Have the children write stories about their leaves. Display the leaf and story of each child on the bulletin board.

The conservation aspect may not need to be stressed in the fall. Find leaves of as many colors as possible during this season to discuss why leaves change color.

CONCEPT: Trees fall or are cut for many reasons.

Activities:

1. Figure method used in cutting some trees in the area and discuss possible reasons for cutting, such as crowding, disease, old age, etc.....

2. Do "Detective Work" on a stump. Example: What kind of tree is it? How was it cut? (Curriculum Enrichment Outdoors, p. 125.)